

ANALYSIS OF STRUCTURE, CONDUCT, PERFORMANCE (SCP) ROBUSTA COFFEE COMMODITIES (COFFEA CANEPHORA)

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Abstract: Coffee commodity is one of the commodities that is the main target of the priority sub-agenda for agro-industry improvement. Indonesia is the fourth largest producer in the world and makes coffee one of the leading plantation commodities. Robusta coffee in Babakan Madang District is one of the coffees that has the potential to be developed because it is a specialty type of coffee that has a distinctive taste and has a wide-open market. However, inadequate marketing due to low prices at the farm level is one of the problems for Robusta coffee in Babakan Madang District. This study aims to analyze the *structure, conduct, performance* of Robusta coffee in Babakan Madang District, Bogor Regency. Data were analyzed qualitatively and quantitatively using the approach *structure, conduct, performance* (SCP). The result of this research is there are 6 established marketing channels, with channel II having the largest sales volume. Analysis of the market structure formed for the marketing of Robusta coffee is monopolistic competition at the farmer level. The level of village collector traders is oligopoly, large trader 1 and large trader 2 monopoly. The Robusta coffee market is very highly concentrated. Barriers to market entry are high for new competitors. In market behavior, the marketing functions performed by each marketing agency are exchange, physical, and facility functions. The price determination at the farm level is carried out by the marketing agency, then at the merchant level the price is determined by themselves. In market performance, the margin value and *farmer's share* efficient are obtained from channel VI, because on this channel the smallest margin value and they are obtained *farmer share* largest.

Keywords: keyword 1; keyword 2; keyword 3 (maximum 6 keywords associated with their paper)

1. INTRODUCTION

Coffee has become one of the main targets of the priority sub-agenda for agro-industry enhancement other than oil palm, cocoa, tea and coconut. Based on USDA data obtained by the Ministry of Agriculture, in general the volume of world coffee exports in the 2012-2016 period reached an average of 7.67 million tones. Indonesia with an average coffee export reached 568.33 tones or dominating the world coffee market 7.41 % are in fourth position after Colombia (Center for Agricultural Data and Information, 2017).

As the fourth largest coffee producer in the world, Indonesia places coffee as one of the leading plantation commodities. Based on data from the Directorate General of Plantation, Indonesia's coffee production is dominated by 81.87% Robusta coffee. West Java is one of the coffee centers in Indonesia with a total production of 16,705-tonnes in 2017. Bogor Regency is one of the districts in West Java which has several sub-districts and is one of the places for developing both Robusta and arabica coffee.

Babakan Madang District is one of the sub-districts in Bogor Regency which is a producer of Robusta and arabica coffee. The types of coffee that exist are mostly Robusta coffee with a total

production in 2018 of 79 tones and a total planted area of Robusta coffee reaching 120 ha (BPS Perkebunan Bogor, 2018). The amount of Robusta coffee production in Babakan Madang District is quite large and high, but it is not the highest production amount in Bogor Regency. Robusta coffee in Babakan Madang District is one of the coffees that has the potential to be developed because it is a specialty type of coffee that has a distinctive taste. Robusta coffee from Babakan Madang District has won fourth place in the Robusta Category Indonesia Specialty Coffee Contest in 2017. The shops in Bogor City have reached 150 shops (Government of West Java, 2018). This is a very big opportunity for marketing coffee in Babakan Madang District. The price of Robusta coffee at the consumer level is based on the research conducted, the form of Robusta coffee is *green bean* around Rp. 21,000 to Rp. 90,000 per kg, while the price of Robusta coffee *green beans* sold by Babakan Madang farmers is from IDR 16,000 to IDR 18,000 per kg. This shows that there is a high difference between the price of Robusta coffee between consumer and farmer levels and that the price of Robusta coffee in Babakan Madang District has the opportunity to get a higher price. Robusta coffee farmers in Babakan Madang Subdistrict are able to produce Robusta coffee with good quality, but farmers are still unable to market their products optimally. This situation weakens the bargaining position of farmers in marketing their robust coffee and tends to accept prices given from village collectors. The role of village traders is more prominent (Paulus, 2006; Anderson et al., 2015). The farmer groups there also do not have a position that makes the farmers more profitable. Farmers still feel a lack of confidence in marketing to farmer groups.

The objectives of this study are 1). Analyzing the market structure for Robusta coffee in Babakan Madang District, Bogor Regency; 2). Analyzing Robusta coffee market behavior in Babakan Madang District, Bogor Regency; 3). Analyzing the performance of the Robusta coffee market in Babakan Madang District, Bogor Regency.

2. METHODS

2.1. Methods of data collection

The method of collecting the respondents used techniques *simple random sampling* and *snowball sampling technique*. *Simple random sampling* is a sample taken in such a way that each research unit from a population has an equal chance of being selected as a sample (Sugiyono, 2008). The *snowball sampling technique* is to determine a sample that starts with a small number of samples then enlarges (Sugiyono, 2008). Technique *Simple Random sampling* was used to determine samples of Robusta coffee farmers in Babakan Madang District. Robusta coffee farmers who were interviewed were 35 farmers out

of a total of 150 farmers. Making the number of samples using the formula (Slovin, 1960) namely:

$$n = \frac{N}{Ne^2 + 1}$$

Description:

n = number of samples

N = Number of populations

e = 15% error rate of

technique *snowball sampling* is used to determine the sample middlemen by marketing channel.

2.4. Data Analysis

The method analytical method used is descriptive and quantitative methods. Descriptive method is used to analyze supply chain diversity and market behavior of Robusta coffee in Babakan Madang

District. The quantitative method is used to analyze the structure and performance of the Robusta coffee market in Babakan Madang Subdistrict with the SCP (approach *Structure, Conduct, Performance*) which includes the size of the market share, market concentration, entry barriers, marketing margin and *farmer share*. Data processing in this study using the Microsoft Excel program.

2.4.1. *Market Structure*

Analysis To analyze the market structure of coffee marketing in Babakan Madang District, Bogor Regency, the market structure analysis method is used, which includes market share, market concentration and entry barriers.

1. Market Share (*Market Share*)

Market share can be measured using the formula:

$$Msi = \frac{Si}{Stot} \times 100\%$$

Description:

- Msi : Market share (%)
- Si : Sales or production capacity
- Stot : Total sales or production

2. Market

Market Concentration is used to measure how much the amount of output produced in industry from the four largest companies in an industry (Baye & Prince, 2006). Market concentration can be measured using a *four firm concentration ratio* (CR₄):

$$CR_4 = \frac{S_1 + S_2 + S_3 + S_4}{ST}$$

$$CR_4 = \frac{W_1 + W_2 + W_3 + W_4}{ST}$$

Description:

- CR₄ : Market concentration
- W_{i=Si}/ S_T : Market share
- i : 1, 2, 3, 4
- S_i : Sales of Robusta coffee are the biggest village collectors to i
- S_t : Total sales of Robusta coffee

Market concentration can also use HHI calculations, namely:

$$HHI = \sum wi^2$$

Description:

HHI: *Herfindahl-Hirschman Index*

W_i² : Market Share

3. Barriers to Entry

Barriers to market entry are analyzed using the *Minimum Efficiency Scale* (MES).

$$MES = \frac{\text{Largest company}}{\text{output total output}} \times 100\%$$

Description:

MES : Barriers to entry

output Largest company: Sales of Robusta coffee biggest collector traders

output Total: Robusta coffee production in Babakan Madang District

2.4.3. Market Conduct

Analysis Analyzing the behavior of the coffee market in Babakan Madang District, Bogor Regency, using descriptive analysis methods of market behavior, including analysis of pricing practices, sales practices and product purchases consisting of marketing channel analysis and analysis of marketing functions and marketing agency. This research will look at how coffee prices are set, and which marketing agencies play a dominant role in price formation

2.4.4. Market Performance

Analysis Analyzing the performance of the coffee market in Babakan Madang Subdistrict, Bogor Regency using market performance analysis methods which include analysis of marketing margin and *farmer's share*.

1. Marketing Margin

Marketing margin is seen from the difference between the price received by producers and the price paid by the final consumer. Marketing margin can be systematically written as follows:

$$MT = Pr - Pf$$

Description:

MT : Total margin

Pr : Price at the end consumer level

Pf : Price at the farmer level

Marketing in a channel can be said to be efficient if the value of the channel margin is lower than the margin value of other marketing agency marketing channels.

2. Farmer's Share

Farmer's share is used to compare the price paid by consumers to the price of products received by farmers (Kohls & Uhl, 2002) Mathematically, *farmer's share* can be calculated using the following formula:

$$Fs = \frac{Pf}{Pr} \times 100\%$$

Description :

Fs : *Farmer's Share*

Pf : Prices at the Farmers Level

Pr : Prices at the Consumer Level

The higher the price paid by consumers to marketing institutions (traders), the smaller the percentage of prices received by farmers, because farmers sell their products at relatively lower prices.

3. RESULTS AND DISCUSSION

Robusta Coffee Marketing Channels in Babakan Madang District can be seen in Figure 1.

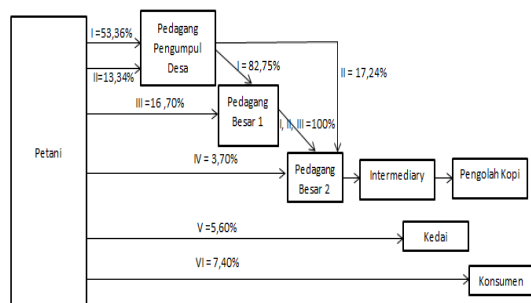


Figure 1 Marketing Channels for Robusta Coffee in Babakan Madang District

Based on Figure 1 the marketing channels formed are as follows:

- Channel I: Farmers - village collectors - wholesalers 1 - wholesalers 2 - intermediary - coffee processors
- Channel II : Farmers - village collectors - wholesalers 2 -- intermediary coffee processors
- Channel III : Farmers - wholesalers 1 - wholesalers 2- intermediary -coffee processors
- Channel IV: Farmers - traders large 2- intermediary- coffee processors
- Channel V : Farmers - shops - consumers
- Channel VI: Farmers – consumers

Robusta coffee marketing channels through channel I are 53.36%, channel II 13.34%, channel III 16.70%, channel IV 3.70%, V channel 5.60% and channel VI 7.40%. Robusta coffee marketing channels in Babakan Madang District have channels that only involve 2 marketing agencies. Farmers directly sell their coffee to consumers and directly to shops or sell directly to wholesalers 2. The longest channel is channel I, which consists of farmer-village-gatherer traders 1-wholesaler 2-intermediary-coffee processor.

3.1. Structure (Structure)

Market structure is known by looking at the size of the market share, market concentration value, HHI and the MES value of the Robusta coffee marketing agency in Babakan Madang District. Determination of the market structure based on the value of market share seen from the seller's point of view obtained the level of monopolistic competition market farmers, village collectors oligopoly and large traders 1, 2 monopoly. This is in line with Baladina (2012) pure monopoly, if a company has a yield of 100% of the market share. Strict oligopoly, if the four leading companies have 60-100% of the market share. Monopolistic competition, if there are many effective competitors, none of them have more than 10% market share. Determination of market structure can be seen in appendix 1.

According to Baladina (2012) the criteria for market structure seen from CR₄ is CR₄ <20% indicates a perfectly competitive market, 20% <CR₄ <40% indicates market monopolistic, 40% <CR₄ <80% indicates market oligopoly, CR₄> 80% indicates a monopoly market. Based on the calculation of the CR value for₄ each level of the marketing institution, the CRvalue₄ at the farm level is 0.35 or 35 percent, which indicates that the market is monopolistic competition. The CRvalues₄ obtained by

village collectors show high numbers, namely 0.88 and 88 percent, which means the oligopoly market. The CR₄ value obtained by wholesaler 1, wholesaler 2, has a high value, reaching 1 or 100 percent, which means that the Robusta coffee market at this level is a monopoly.

In addition to using CR₄, the market structure can be identified by the HHI (*Herfindahl-Hirschman-Index*) listed in table 10 above. The value of the HHI obtained from all levels is more than 0, meaning that the market at all levels is concentrated. This is in accordance with Baye & Prince (2006) who stated that the value of HHI is in the range of 0 - 10,000. If the HHI value is 0, then there are companies in the industry that are very small. However, if the value is above 0 to 10,000 indicates that the market share is 1, it means that CR has little competition between producers and consumers (concentrated market). Based on Baladina (2012) with a value of $0 < \text{HHI} < 1$ including the oligopoly market, it can be seen that the level of farmers and village collectors is an oligopoly market, whereas if the value of HHI = 1 then it is a monopoly market, this happens at the level of wholesaler 1 and wholesaler 2.

The market structure formed at the farm level is monopolistic competition, where the number of sellers and buyers a lot as well as the diversity of products that are differentiated, in terms of the better quality of Robusta coffee price will be more expensive (Dahl & Hammond, 1977). The market structure is formed at the level of oligopoly village traders, where the number of sellers is large and there are only a few buyers. The market structure formed at the level of wholesaler 1 and wholesaler 2 is a monopoly, where there is only one seller.

Barriers to market entry are calculated using the *Minimum Efficiency Scale* (MES) shown in table 10. Based on Table 10, the MES values obtained can be said that all at the marketing agency level, the MES score was more than 10 percent. This shows that there are market entry barriers in the marketing of Robusta coffee in Babakan Madang District so that it is not easy for new competitors to enter the market. This agrees with Jaya (2001) that if the MES value is greater than 10 percent, it indicates that there are barriers to entry.

At the farmer level, the difficulty in entering this market is due to capital. In line with what Shepherd & Shepherd (2003) said, one of the barriers to entry is capital. The capital used for farming Robusta coffee is not small. Then the existing land in the research area has been used for decades as a livelihood field for both main and secondary farmers so it is difficult to get new land (Rigg, 2006; Deininger & Byerlee, 2011; Tsikata & Yaro, 2014). At the level of village traders, it is difficult to enter this market due to the strong ties between farmers and village collectors as customers. The strong ties are due to the existence of capital ties between farmers and village collector traders, where village collector traders have helped many farmers' businesses (Lyon, 2000). As for the strong ties of kinship or neighbor relations that have been decades.

The highest MES value is at the level of wholesaler 1 and wholesaler 2, which is 100 percent because there is only one trader at this level so that other sellers find it difficult to compete and it is difficult to enter the market. This is because wholesaler 1 and wholesaler 2 are highly trusted among traders and farmers. Then to become a big trader 1 and 2 requires a large capital. This capital is used to buy the Robusta coffee harvest and to operate in marketing. Coffee delivery from various regions other than Babakan Madang Subdistrict also sends the goods to wholesaler 1 or to wholesaler 2.

3.2. Market Behavior

3.3.1 Marketing Function

Every marketing agency has its own marketing function (Doyle, 2016; de Swaan Arons et al., 2014). Farmers perform all marketing functions except the purchase exchange function. Village

collectors, wholesaler 1, wholesaler 2 perform all marketing functions except for sorting and grading facilities. The store performs all marketing functions. Marketing functions can be seen in appendix 2.

3.3.2 Sales and Purchasing Practices

All marketing agencies carry out sales activities, while purchasing activities are only carried out by marketing agencies after farmers, namely village collectors, wholesalers 1, wholesalers 2 and shops (Asmarantaka, 2012). This is because farmers grow Robusta coffee so they don't make purchases.

3.3.3 Price Determination Behavior

The price determinants in the marketing of Robusta coffee in Babakan Madang District are based on the price *taker* and the price *maker*. Based on events in the field, the price determinants are usually the price determined by the marketing agency after the farmers and farmers are in a weak position to determine the price. Meanwhile, prices at the merchant level are determined by themselves. The selling price at the farm level ranges from IDR 16.000 to IDR18.000. The level of village traders ranging from IDR16.000 to IDR 18.000. Wholesaler 1 price ranges from IDR 17.000 - up to IDR 18.000. Wholesaler level 2 prices range from IDR 19.000. Robusta coffee is sold in the form of *green beans* (coffee beans that have not been roasted) which do not undergo sorting and grading. Prices at the shop and consumer levels are relatively higher because the Robusta coffee being sold undergoes sorting and grading, ranging from IDR 30.000 to IDR 40.000.

3.3.4 Flow of Goods

Flow 1 occurs when goods flow from farmers to consumers, farmers to shops, farmers to large traders 2, farmers to large traders 1, and farmers to village collectors. The second flow of goods occurs from village collectors to wholesalers 1, village collectors to large traders 2, wholesalers 2 *intermediary* and shops to consumers. The third flow of goods occurs from large traders 1 to large traders 2 and large traders 2 to *intermediaries*. The fourth flow occurs from wholesalers 2 to consumers. For the marketing flow can be seen in Figure 2.

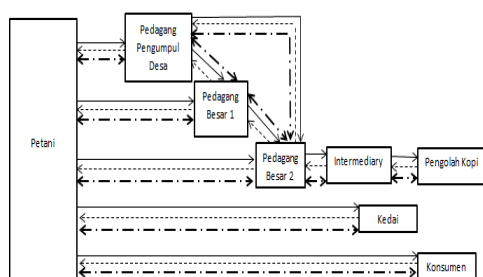


Figure 2 Robusta Coffee Flow Babakan Madang District

Description:

- Flow of Goods
- Financial
- Flow Information Flow

3.3.5. *Financial Flow*

The first financial flow occurs from consumers to farmers, consumers to wholesalers 2, consumers to shops. The second financial flow occurs from shops to farmers, big traders 2 to farmers, big traders 2 to big traders 1, and big traders 2 to village gathering traders. The third financial flow occurs from large traders 1 to village gatherers and large traders 1 to farmers. The fourth flow occurs from village traders to farmers.

3.3.6. *Information Flow*

Information flow from farmers to intermediary traders in the form of information on the number of harvests (Poulton et al., 2010; Jagwe, 2011; Magesa et al., 2014). Meanwhile, information from intermediary traders to farmers is in the form of market price information. Both information on the amount of harvest or price information occur directly when marketing agencies meet to buy or sell Robusta coffee.

3.4 Market Performance

3.4.1. *Marketing Margin*

The channel with the highest margin is based on channel V, because in this channel farmers sell Robusta coffee to shops in the form of *green bean* Robusta coffee which has been sorted and *graded* and makes higher prices compared to other marketers. Meanwhile, channel VI has the lowest margin value, which is 0 because in channel VI, farmers sell directly to consumers so that all farmers get their profits.

Based on the total margin value, it can be concluded that the most efficient marketing channel is channel VI with the lowest total margin value. This is in line with research by (Normalina, 2019) which states that channel 1 in the marketing of any sugar in Hargorejo Village is the best because it has the lowest margin value. However, if seen from the size of the profit, farmers are advised to sell Robusta coffee according to channel V, namely farmers selling to the shop, because when viewed from the results, farmers get the highest profit compared to selling on other channels. If seen from the sales of form *green beans*, channel IV is a channel that can be used as an alternative for farmer marketing compared to channel I, II, III, channel IV which has the lowest margin.

3.4.2 *Farmer's Share*

According to Kohls & Uhl (2002), if the farmer's *share* received by farmers is smaller than 50 percent, the marketing system is said to be inefficient. Based on the farmer's share value obtained in table 13, all channels that are less than 50 percent are channel III, so it can be said that channel III is not efficient. While channels I, II, IV, V, VI are valued at more than 50 percent, it can be said that these channels are efficient.

Based on the *farmer's share value*, it can be concluded that channel VI is an alternative channel in marketing Robusta coffee in Babakan Madang District because it has *the farmer share value* highest among other channels. The value of *farmer's share* can be seen in appendix 4. The discussion section is intended to interpret the findings of the study in accordance with the theories used and not merely describe the founding. The discussion must be enriched by referring to the results of previous studies that have been published in scientific journals.

4. CONCLUSION

The market structure formed for the marketing of Robusta coffee from the seller's point of view in Babakan Madang District is monopolistic competition at the farmer level. The level of village traders is oligopoly. Big merchant level 1 and wholesaler 2 is monopolies. The Robusta coffee market is very highly concentrated. Barriers to market entry are very high for new competitors due to high ties between farmers and traders. The price determination at the farm level is carried out by the next marketing agency, while at the merchant level the price is determined by themselves based on price information from the market. The payment system tends to use a cash system at the farm level as well as the merchant level. The marketing functions carried out are the exchange function (buying and selling), physical function (transportation, storage), and facility function (risk bearer, cost and price information). There are six marketing channels formed, namely channel I: farmers - village collectors - big traders 1 - big traders 2 -- *intermediary coffee* processors, channel II: farmers - village collectors - big traders 2 -- *intermediary coffee* processors, channel III: farmer - wholesaler 1 - wholesaler 2 - *intermediary-coffee* processor, channel IV: farmer-big trader 2 - *intermediary-coffee* processor, channel V: farmer - shop - consumer and channel VI: farmer-consumer. Based on the market performance analysis, the overall margin value is obtained by channel VI as the lowest margin. If viewed from the margin value in the form of Robusta coffee *green bean*, channel IV is the channel with the smallest margin between channels I to IV. The *farmer's share value* is largest on channel VI.

Based on the analysis conducted, channel VI: farmers selling directly to consumers is the most efficient marketing channel in marketing Robusta coffee with the lowest margin value and high *farmer share* value so that it can be used as an alternative marketing channel chosen for farmers but farmers must sell in the form of coffee powder. Channel V can be used as an alternative as well because it has a high profit and *farmer share*, provided that the farmers do sorting and *grading*. If farmers sell in the form of *green beans* that do not sort and *grading*, the alternative is to choose channel IV, namely sales to wholesalers. 2. Farmers are expected to sort and *grade* so that the Robusta coffee sold has a higher value. The government is expected to strengthen the institutional function of farmer groups in the research area by optimizing the production, processing and marketing of Robusta coffee in the research area in order to break the marketing chain so that farmers can sell directly to the shop because the sale to the shop has a high profit and *farmer share*.

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